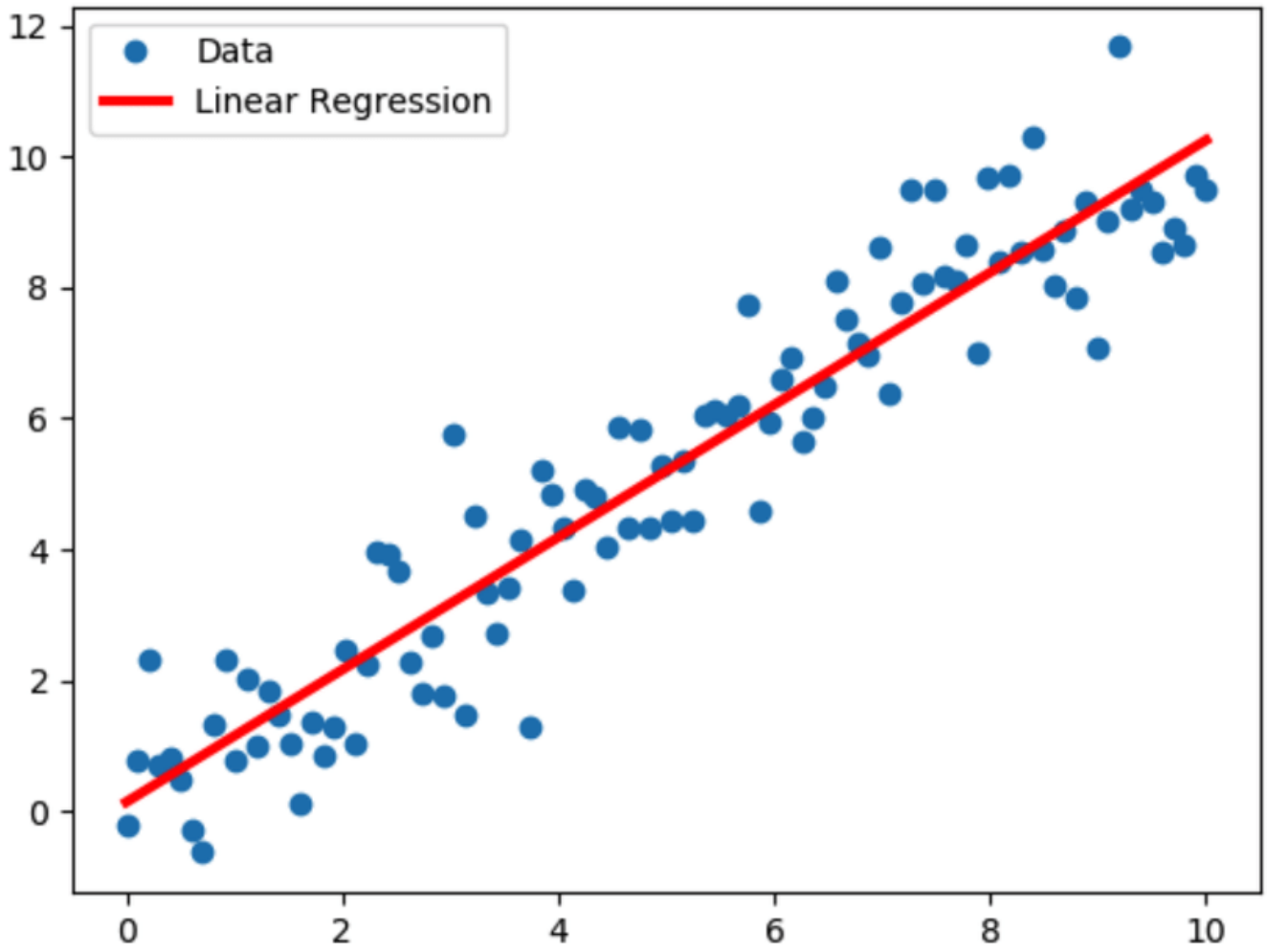
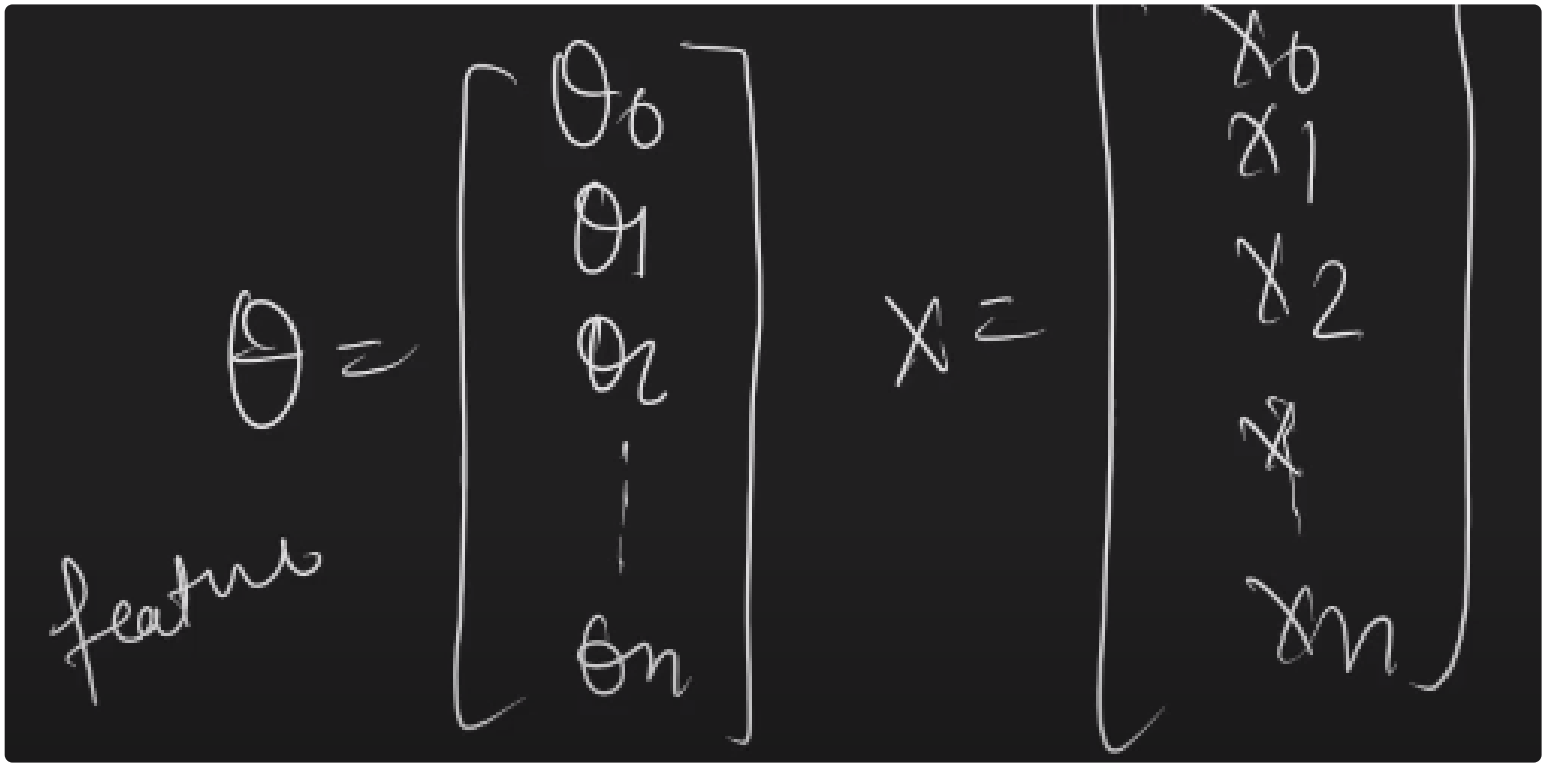
-> Fitting a straight line (called **Hypothesis**) to the data for prediction



Hypothesis Function

$$f(x) = \Theta_0.x_0 + \Theta_1.x_1 + \Theta_2.x_2 \quad ..... \quad \Theta_n.x_n$$

Vectorised Form



$$\therefore \quad f(x) = \Theta.x$$

Cost Function

-> Used to evaluate the performance of a model.

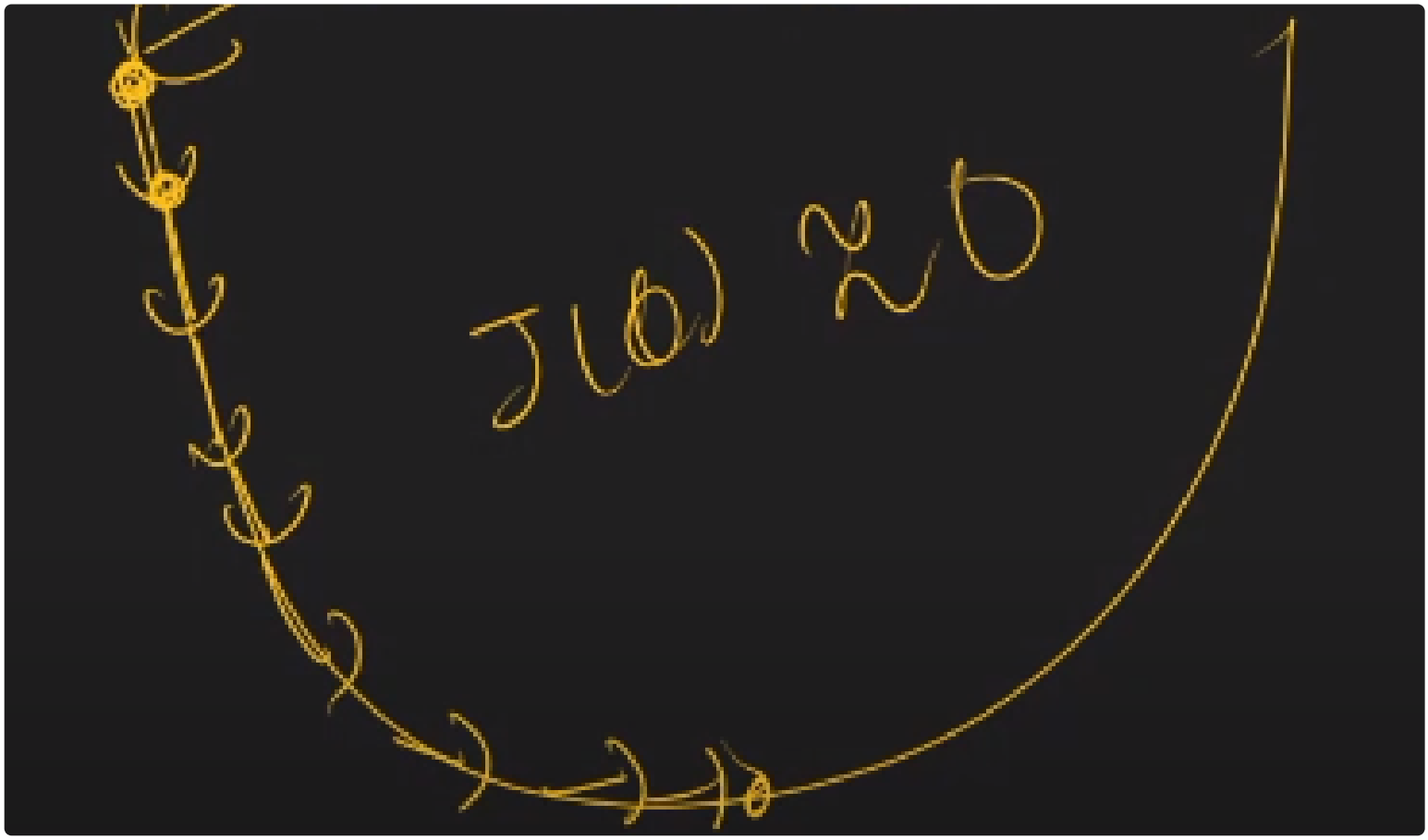
$$J(\theta_0, \theta_1) = \frac{1}{2m} \sum_{i=1}^{m} (h_\theta(x_i) - y_i)^2$$

Gradient Descent

-> Optimization algorithm that decreases the cost function

How it works

- Checks the value of θ at every step
- If it's lower than the previous value, it edits the valuw to the new one
- Continiues till the deepest point in the slope is reached



Where to use Linear Regression

-> The data should have a linear relationship

-> There should be no/little multicollinearity